SELECTED PROCEDURES AND USE OF DENTAL MATERIALS. A COMPARISON BETWEEN PRINCE PHILIP DENTAL HOSPITAL AND GENERAL DENTAL PRACTICE

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ABSTRACT

During the past eleven years the Dental Faculty at the Prince Philip Dental Hospital (PPDH) has graduated around 580 dentists of which about 90% are in general dental practice (GDP).

It might therefore be interesting to get an impression of the extent to which the teaching at PPDH is used in GDP and to what extent it fits into the daily procedures in GDP.

Objectives:

1. To obtain and analyze information from GDPs and the staff in PPDH on some special items.

2. To identify areas where improvement (better concordance) can be obtained.

3. To give recommendations to PPDH, GDPs and students.

We therefore decided to have a closer look at the following items:

1. Infection control

2. Cooperation with auxiliary staff

3. Techniques, materials and procedures

4. Patient Management

5. Oral diagnosis and treatment planning

Questionnaires concerning the above mentioned areas were mailed to 170 GDPs randomly selected and equally distributed over all graduation years. After two weeks a reminder was given to all dentists and those who had not answered were encouraged to do so. Five ODTP-cases were given to 22 randomly selected dentists together with an interview.

One hundred and five questionnaires were returned (61%). These showed the following:

Only 27% of the respondents took a medical history at every visit or updated the existing, and 66% took a medical history only at the first visit. Twelve % sometimes took a medical history, 4% seldom and 1% never. To this should be added that 29% entrusted the DSA to do so.

Protective eyeglasses were always worn by 91% of the dentists and 96% always wore gloves. About 75 washed their hands both before and after treatment and 85% replaced gloves in between patients. Of the remaining 25% washed hands 39% only washed occasionally or never.

The same infection control procedure was used for all patients by 74% of the dentists. Their guidelines for infection control was mainly obtained from undergraduate teaching (95%).

Autoclaving was the most common method for routine sterilization of instruments (98%) followed by chemical "sterilization" (80%). The main obstacles towards obtaining "ideal" infection control were expenditures (76%), difficulties in fitting the procedures into daily routine (61%) and lack of manpower (33%).

Besides the normal duties which a DSA is educated for, they were also used as receptionists (96%), to pour impressions (65%) and medical history taking (29%). Communication with the dental laboratory was both written and by phone (90%). Some even supplied with photos (12%).

Rubber dam isolation was used by 11% during root canal therapy, 23% never used it. For resin-bonded restorations, 4% always used rubber dam and 38% never.

Only about 18% of the dentists used topical anesthesia before injection.

The use of radiographs in dental check-up, diagnosis of caries and periodontal diseases was rather common (70-90% did so).

Most dentists reminded their patients about the next visit.

The most common reasons for patients to refuse treatment were - according to the dentists - great expenses (96%) and pain during treatment (51%).

The ODTP-cases shown to the dentists gave some interesting diagnosis and suggestions for treatment which to some extent differs from what is taught at PPDH.

The results will be discussed ending up with the following recommendations:

1. All dentists should regularly be reminded of the importance of taking a medical history of new patients and of updating the history regularly by themselves.

2. Guidelines and criteria for infection control should be stressed by the Hong Kong Dental Association and maybe even checked.

3. GDPs should be encouraged to participate in continuing education to update their professional knowledge.

4. The use of rubber dam in GDP should be recommended.

5. The students should learn how to train and work together with the auxiliary staff.

INTRODUCTION

The faculty of Dentistry of the University of Hong Kong is situated at the Prince Philip Dental Hospital (PPDH) which was established in 1980. On average, there are about 50 dental students who finish the 4½ year (changed to 5 year after 1994) training and obtain the Degree of Bachelor of Dental Surgery. Throughout the past 11 years, the dental school has provided about 580 qualified dentists to the community. Among them, about 90% are in the private sector.

As a result of that, we are interested in investigating how good or appropriate the curriculum is in order to train dental students to become general dental practitioners (GDP).

In fact Prince Philip Dental Hospital is one of the most well equipped concerning both technical facilities and teachers in Asia. The teaching staff including full time and part time lecturers and auxiliary staff work co-operatively to provide treatment to patients and form an excellent environment for the training of dental students. Therefore it would be likely that the techniques, materials and procedures taught, followed and used by students are close to ideal. This is so much easier to obtain because the patients admitted to the hospital have been screened by experienced dentists and "selected" for students. Students can therefore carry out their treatments on the patients with relatively less concern about other factors, e.g. time, costs, patient's behaviour and so on. Thus, the conditions for treating these patients are close to ideal.

However, it is obviously a different world outside the hospital. It is very important especially for final year dental students to familiarize themselves to the conditions under which general practitioners have to work.

Therefore we would like to compare some selected routines and dental materials used in general practice with what is taught at the Faculty of Dentistry to see if the recommendations given by the Faculty are followed and can be transferred to general practice without too many problems.

Although this survey will not give concrete and strict answers to the Faculty, general practitioners and students, we hope that it can function as a guideline for students who will join the private sector later and highlight some areas where the Faculty should be especially careful in the teaching of dental students.

We are not aware of that such a survey has been done before and have not been able to find any references to the topic.

Aim

The aim of this project was to investigate the difference - if any - between the procedures in general practice and what have been taught at PPDH in terms of 1) oral diagnosis and treatment planning, 2) infection control, 3) co-operation with auxiliary staff, 4) techniques, materials and procedures and 5) patient management and possible, the results should end up with that would be of benefit to the dental profession and the public and smoothen the transition from a student to a GDP.

Objectives

1. To obtain and analyze information from GDP and staff in PPDH concerning the above 5 items mentioned.

2. To identify areas where improvement (better concordance) can be made.

3. To give recommendations to PPDH, GDP's and students.

MATERIALS AND METHODS

The survey consisted of two parts:

Part I

Sixteen dentists from each class graduated from 1985-95 of the University of Hong Kong were randomly selected from the 1995 Dentist Register published by the Government (a total of 170 dentists). Each dentist was mailed a questionnaire consisting of 24 questions and a letter that explained the reason for the questionnaire. It was stressed that the answer of the questionnaire would be anonymous (appendix A). One week after the deadline for returning the questionnaire all dentists involved were contacted by phone and asked if they had returned the questionnaire. If not, they were prompted to do so and offered a new questionnaire if the first one had been lost. The questionnaire dealt with the following issues which were chosen after consulting tutors and teachers at PPDH:

1. Infection control
2. Co-operation with auxiliary staff
3. Use of materials, equipment and different techniques
4. Ways of establishing and maintaining patient compliance concerning regular dental visits and treatment

The different answers to the questionnaires were computerized and analyzed.

Part II

Twenty-two dentists, 2 randomly selected from each class of the above subject group were given 5 cases from the 'Oral Diagnosis and Treatment Planning" course (appendix B). The cases were from 4 different departments (Children's Dentistry & Orthodontics, Conservative Dentistry, Periodontology & Public Health and Prosthetic Dentistry). Each case consisted of a brief history and patients' complaints, clinical photos, radiographs and chartings. The dentists were asked to give a diagnosis and a treatment plan for each case. This was done as an open ended interview conducted by group members. Besides, the dentists were asked to state the reasons for their choice. The results were compared to the suggestions given by the departments at PPDH.

Timetable for the project:

Sept-Oct 95: Project choice and definition. Planning.
Oct-Nov 95: Interviewing tutors, teachers. Preparation of questionnaire.
Nov-Dec 95: Correction and adjustment of questionnaire. Sending out questionnaire.
Dec-Jan 96: Interviews of dentist concerning cases. Processing data.
Jan-Feb 96: Writing project report.
Feb 96: Oral presentation. Submission of report.

RESULTS

Of 170 questionnaires sent out, 105 were returned which means a response rate of 61%. For detailed description of the single questions, see appendix 2.

Infection control

Only 27% of the respondents took a medical history at every visit. This medical history included important information for Infectious Diseases. Sixty-six percent only performed a medical questioning at first visit. Twelve percent sometimes took a medical history, 4% seldom and 1% never (Figure 1).

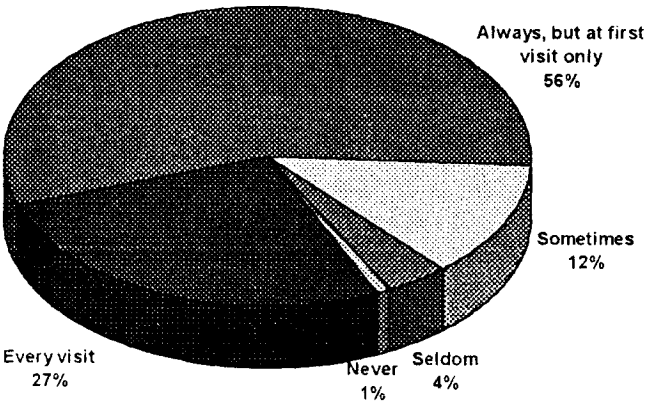


Figure 1 How often do dentists take a medical history including questions related to infectious diseases?

About 91% of the dentists replied that they always wore protective eyeglasses (Figure 2), 100% always wore face-mask, 96% always wore gloves (Figure 6). The rest used gloves more or less sporadically or **never** (8%). About 75% always washed their hands before and after treating patients (Figure 3), and replaced gloves in between patients (Figure 7). The remaining (25%) washed only **before** treatment (71%) (Figure 4), **after** treatment (73%) or only occasionally or never (29%) (Figure 5).

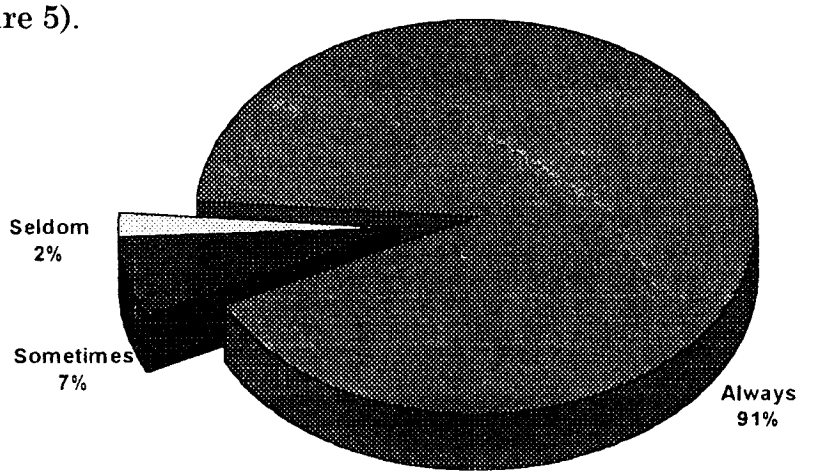


Figure 2 How often do dentists wear protective eyeglasses?

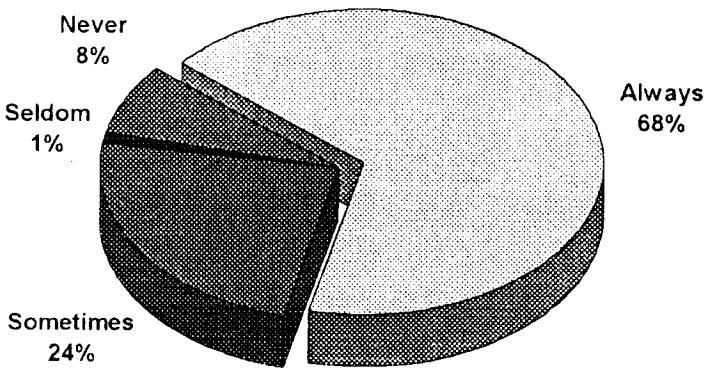


Figure 3 **How often do dentists wash hands before and after treating patients?**

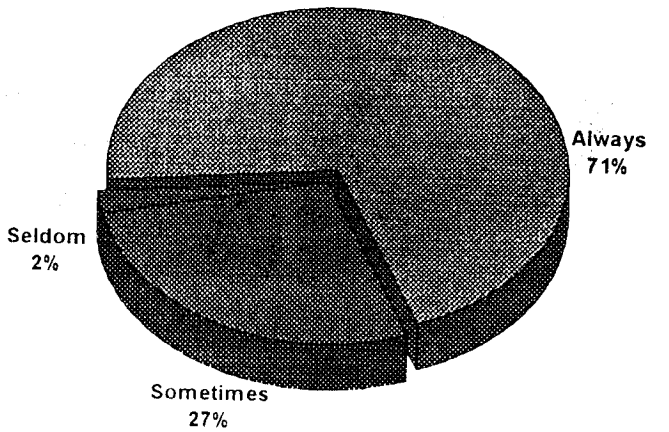


Figure 4 **How often do dentists wash their hands before treatment?**

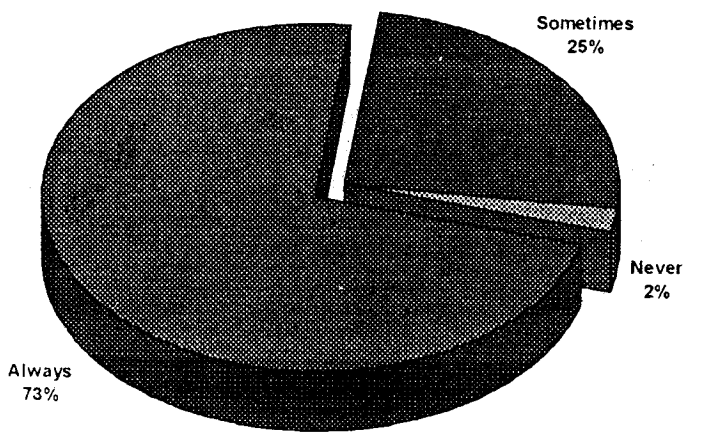


Figure 5 **How often do dentists wash hand after treatment?**

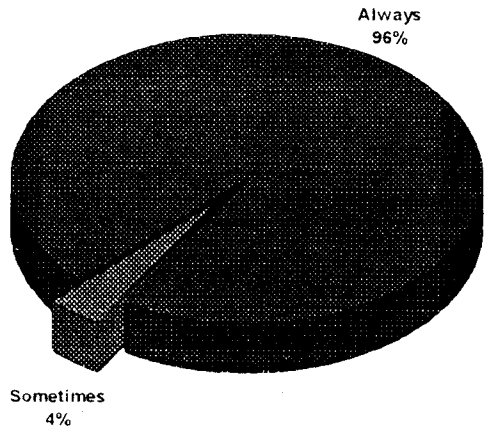


Figure 6 How often do dentist wear gloves?

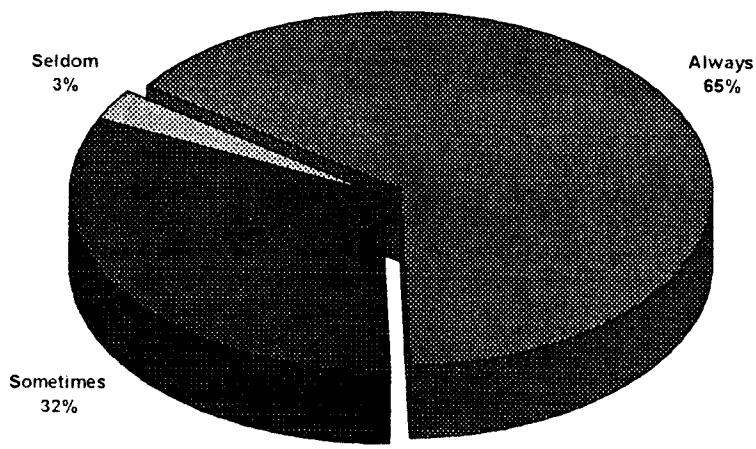


Figure 7 How often do dentists replace gloves in between patients?

Seventy-four percent employed the same infection control procedures for all patients (Figure 10). Their guidelines for infection control was obtained through the undergraduate training (95.2%). Forty-six percent got new guidelines from journals and 39% from information gained from commercial advertising (Figure 11).

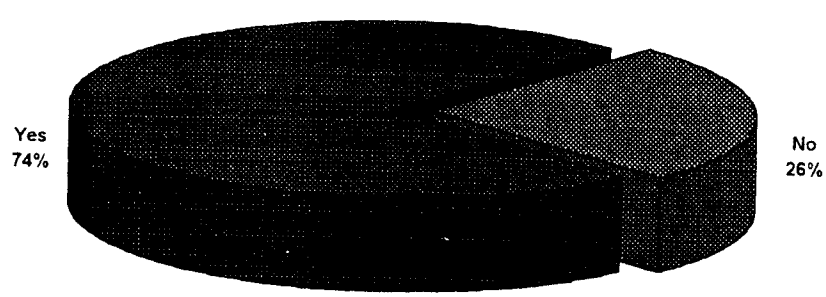


Figure 10 Would every dentist employ the same infection control procedures for all patients?

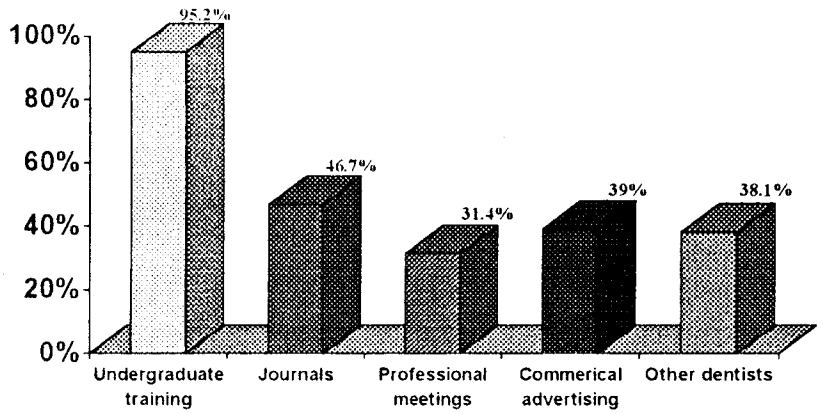


Figure 11 Sources of information/guidelines for infection control

Autoclaving was the most common method for routine sterilization of instruments (98%) followed by chemical "sterilization" (80%). Nobody used boiling water (Figure 8).

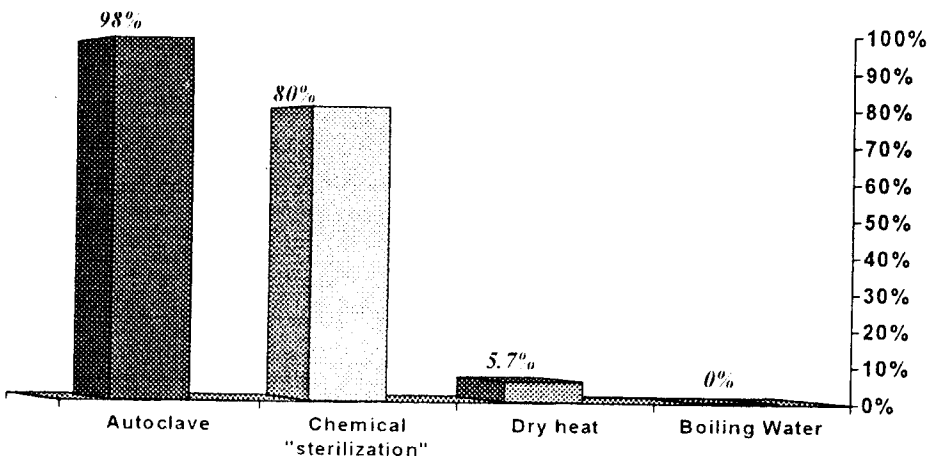


Figure 8 What sterilization procedures do dentists employ?

The most common used disinfectants in private practice was glutaldehyde (~80%), alcohol (28%), and chlorhexidine (15%) (Figure 9).

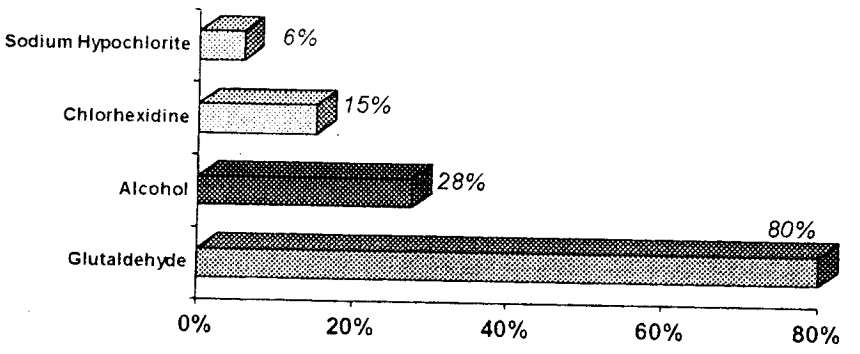


Figure 9 Common chemical disinfectants used in private practice

The dentists replied that the main obstacles towards achieving 'ideal infection control" were expenditures (76%), difficulties in fitting the procedures into daily routines (61%) and lack of manpower (33%) (Figure 12, 13).

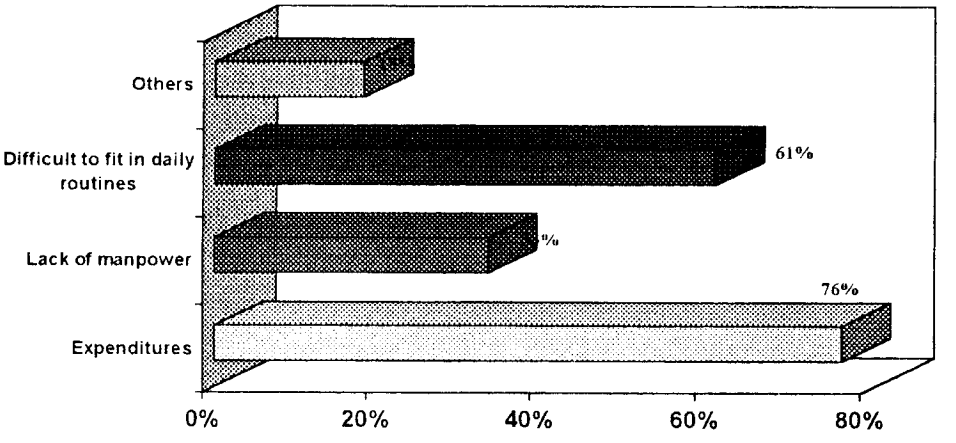
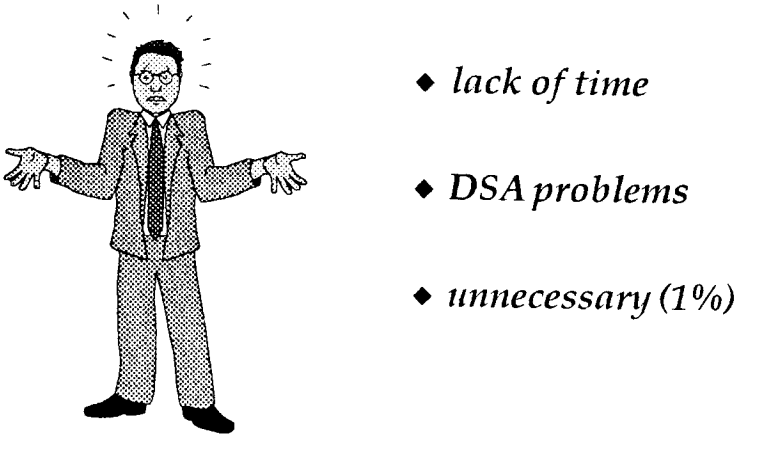


Figure 12 The main obstacles to achieve "ideal infection control"



- *lack of time*
- *DSA problems*
- *unnecessary (1%)*

Figure 13 Other main obstacles

It was found that 61% of the dentists had not experienced sharps/needle sticks injury in the last year, 38% had experienced this accident 1-3 times and 1% more than 3 times (Figure 14).

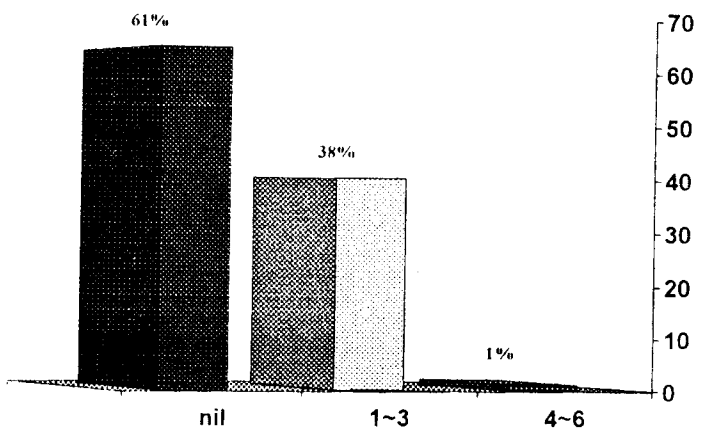


Figure 14 No. of sharp needle stick injuries exposed to during the last year

Cooperation with auxiliary staff

It was found that apart from what the dental surgery assistants (DSA) are normally educated to perform, they also worked as receptionist (96%), pouring impression (65%) and about 29% of them took medical history (Figure 15, 16). Most of the dentists (~90%) trained their DSAs themselves (Figure 17).

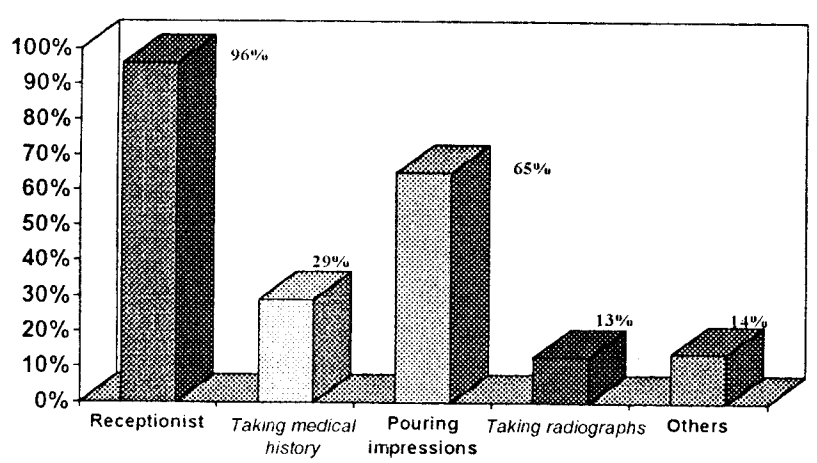


Figure 15 "Extra" work which is performed by DSA (apart from their normal routines duties)

- *stock keeping*
- *processing radiographs*
- *laboratory work*

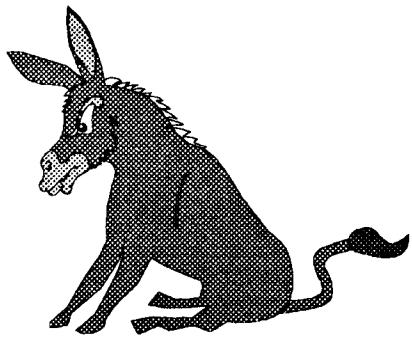
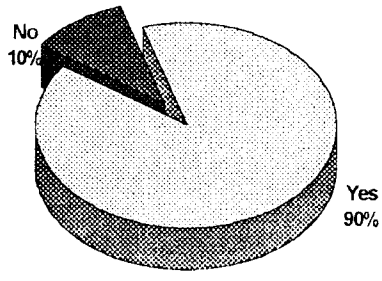


Figure 16 Other duties



Difficulties in training DSA

- Language Barrier
- Variation in education level
- Lack of time
- Rapid turnover rate

Figure 17 Do dentists train their own DSA?

Only 4% of dentists referred their patients to a dental hygienist (DH) (Figure 25).

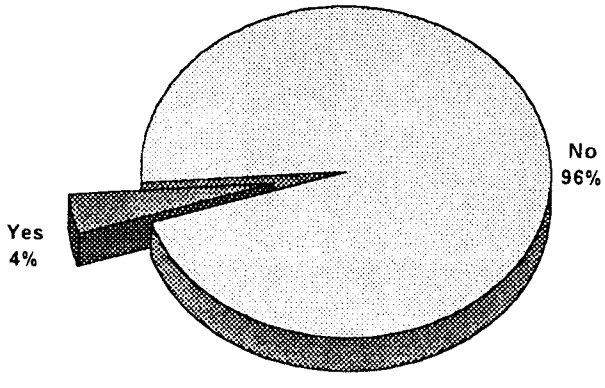


Figure 25 Any refer to hygienist?

About 40% of the dentists reported that they constructed the bite-rim (Figure 22) and custom tray themselves (Figure 21) instead of leaving this to laboratory technicians. Half of them poured their working impressions (Figure 19) and 33% repaired dentures themselves (Figure 20). The most common ways of communication between dentists and the dental laboratory were written laboratory instruction **and** by telephone (more than 90%). Twelve percent supplied the communication with photographs (Figure 23, 24).

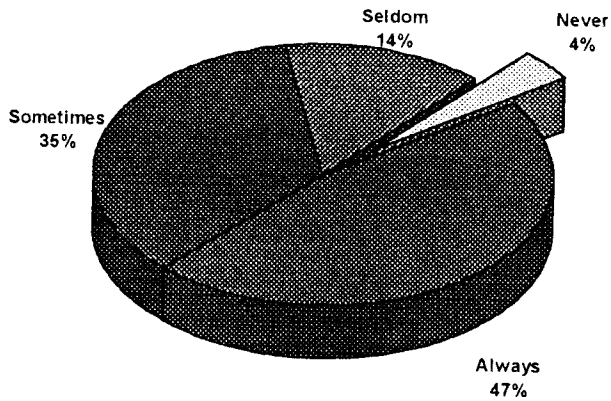


Figure 19 Do dentists pour their own working impression?

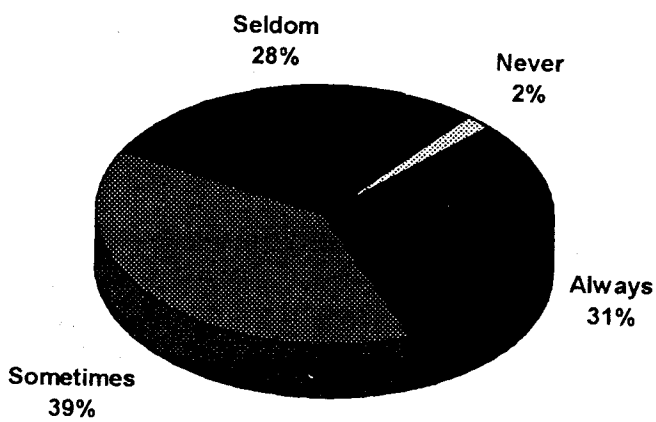


Figure 20 Do dentists repair dentures by themselves?

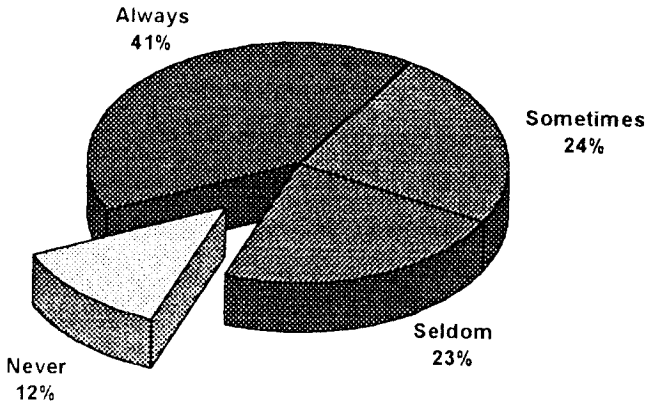


Figure 21 Do dentists construct custom trays by themselves?

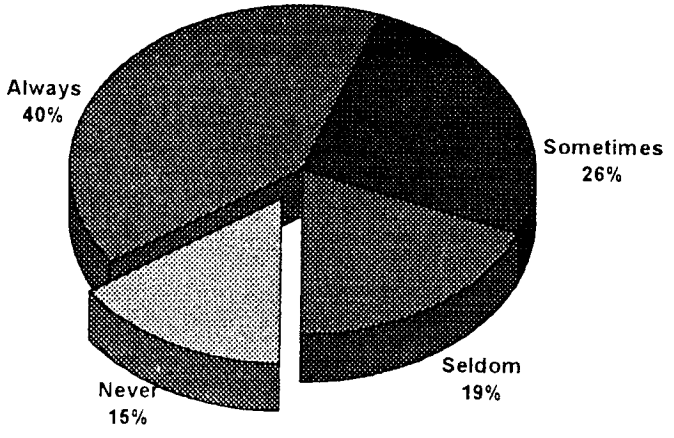


Figure 22 Do dentists construct bite-rim by themselves?

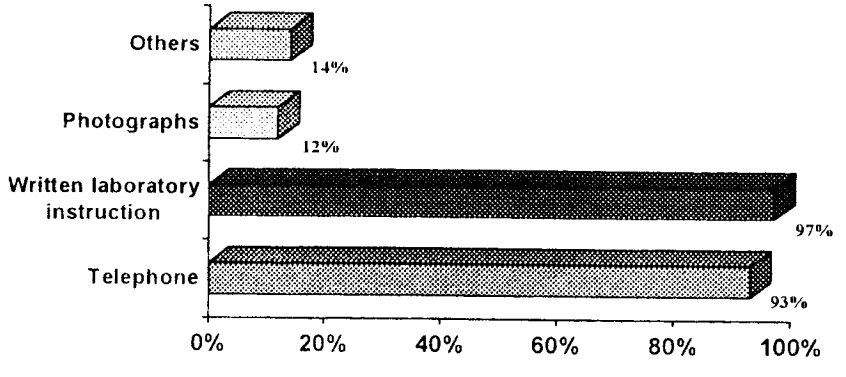


Figure 23 Ways of communication between dentists and dental laboratory

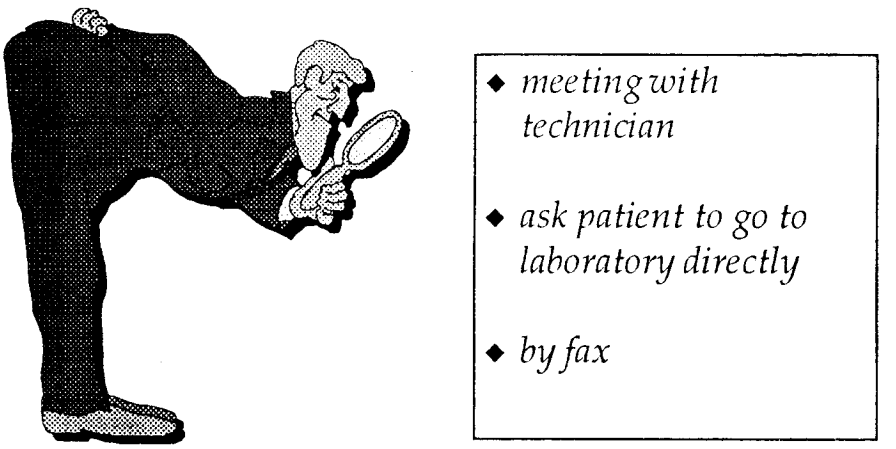


Figure 24 Other ways of communication

Techniques, materials and procedures

About 11% of the dentists used rubber dam isolation during root canal therapy, 23% of them never. For resin-bonded restoration 4% used and 38% did not used rubber dam at all. For bleaching, 37% used rubber dam and 28% of them did not. For resin-bonded cementation, 15% of them used rubber dam and 35% of them never (Figure 26).

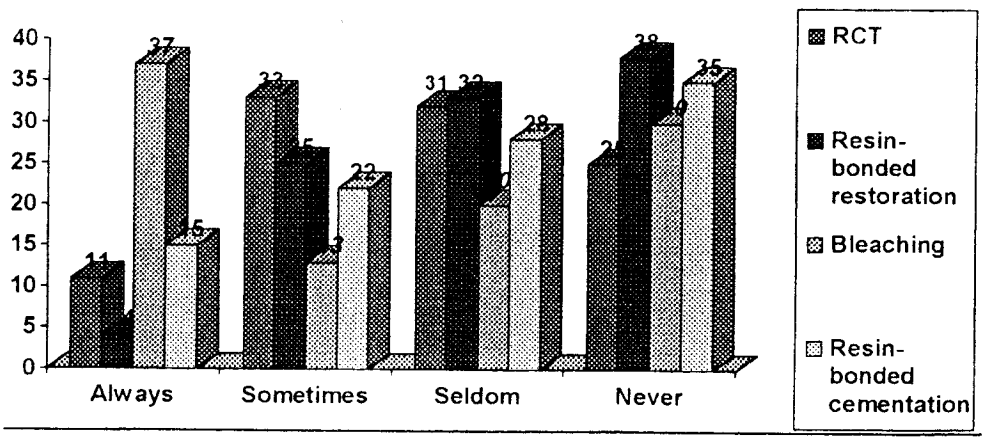


Figure 26 Is rubber dam common in general practice?

For partial denture construction, 52% of dentists took preliminary impressions, whereas 99% of them started with tooth preparation and working impression at the first visit. Ninety-four % performed a frame-work try-in. For complete denture construction, 94% took preliminary impressions and about 70% performed a baseplate try-in. Only 1/3 of them made balanced try-in for their patient (Figure 30).

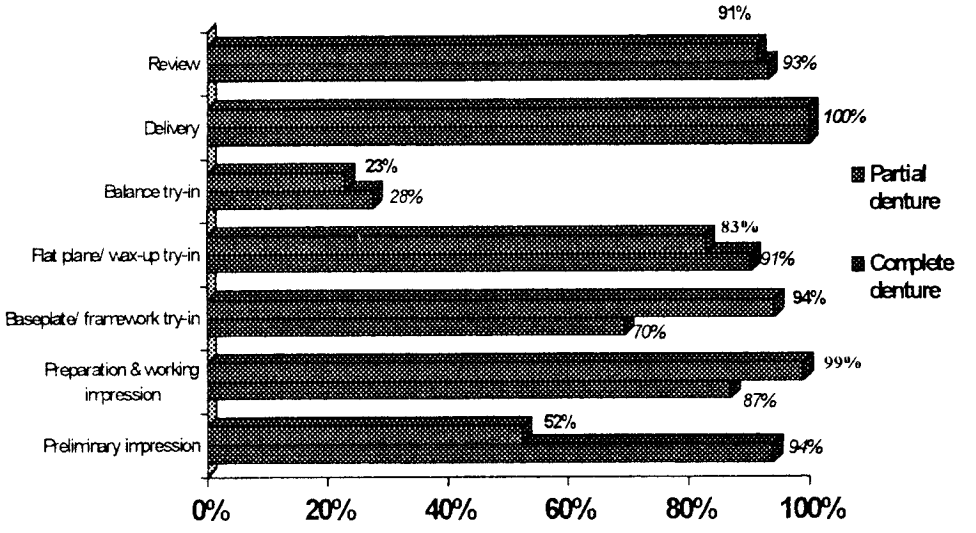


Figure 30 How do HKU graduates construct partial/complete denture?

About 18% of the dentists used topical anesthesia before injection of local anesthesia, 56% sometimes did and 25% seldom (Figure 31).

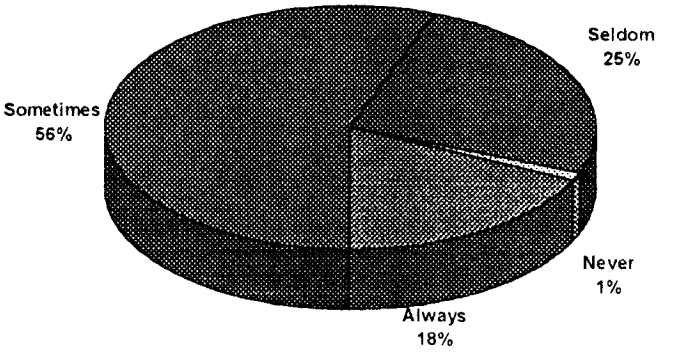


Figure 31 Use of topical anesthesia before injection of local anesthesia

The use of radiographs in dental check-up, diagnosis of caries, periodontal disease was rather common. Only 13%, 7%, and 18%, respectively, seldom did so (Figure 32, 33, 34). Almost of all dentists had bitewings and periapical X-rays of their patients, only 15% had panelipse (Figure 37, 38).

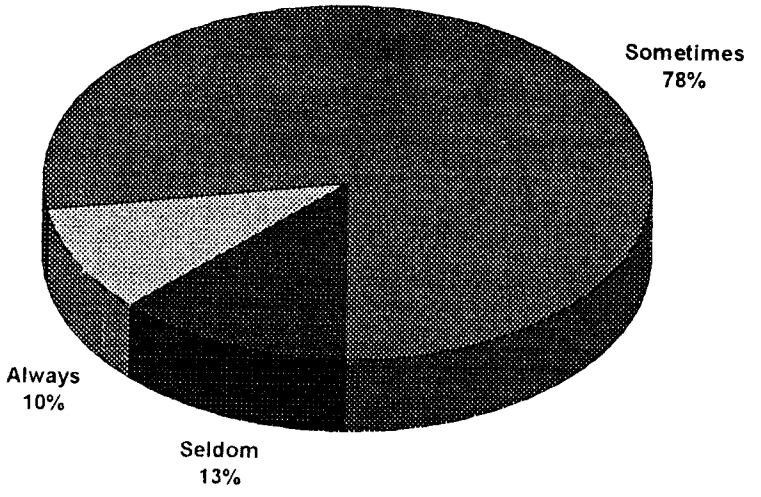


Figure 32 Use of radiographs in dental check-up

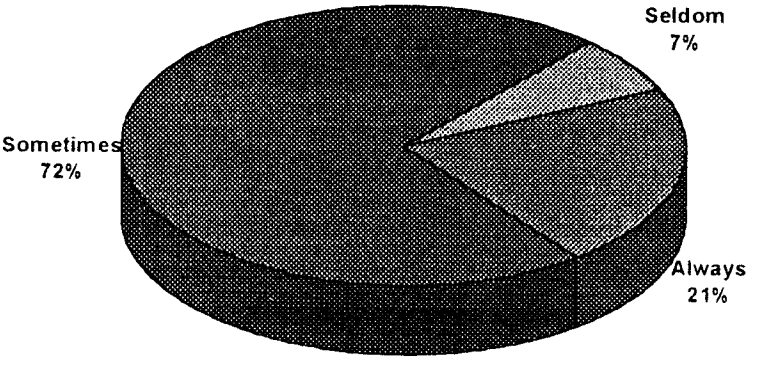


Figure 33 Use of radiographs in the diagnosis of caries

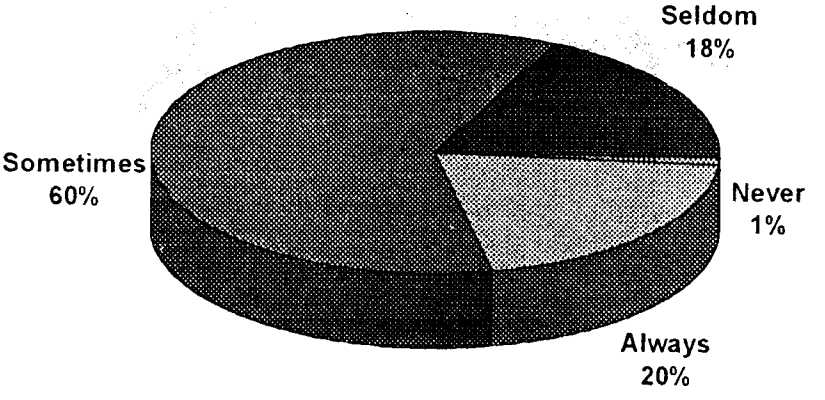


Figure 34 Use of radiographs in the diagnosis of periodontal disease

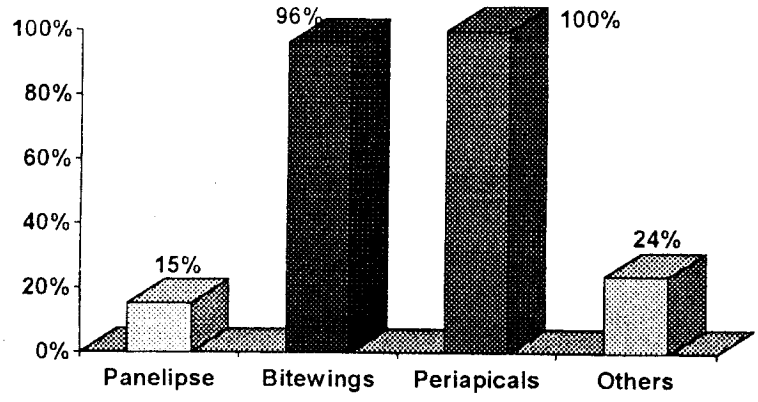


Figure 37 Types of radiographs available in dental clinics

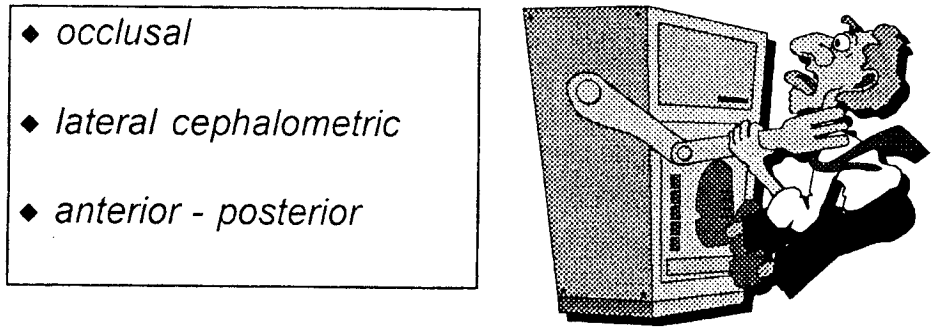


Figure 38 Other radiographs available

Concerning impression materials used in crown and bridge work, 56% of dentists used silicone, 41% polyether and only 3% used polysulphide (Figure 27). For partial denture constructions, the most commonly used impression materials were alginate (81%), silicone 7% and polyether and polysulphide (3% each) (Figure 28).

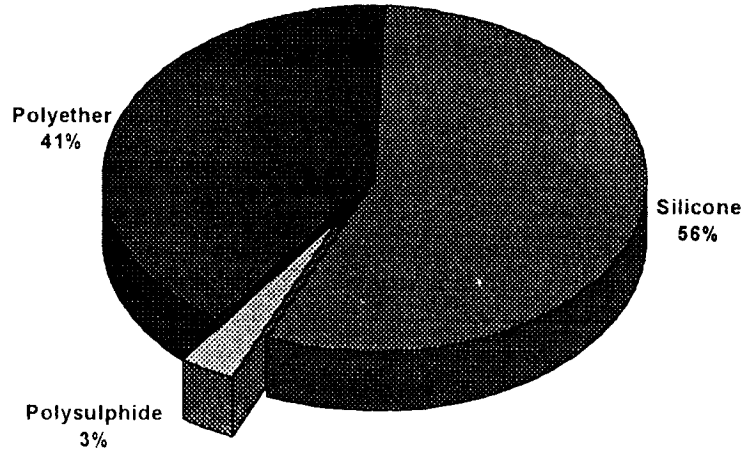


Figure 27 Common impression materials used in general practice: crown and bridge

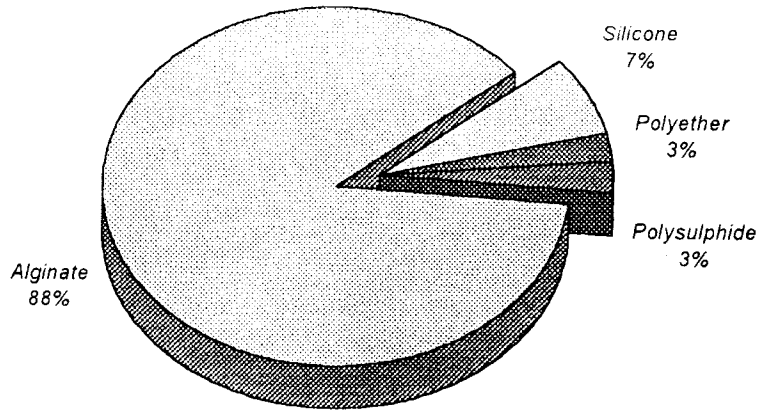


Figure 28 Common impression materials used in general practice: partial denture

For complete denture constructions, the most commonly used impression materials were zinc-oxide engenol (~48%), alginate (~31%) and silicone (12%) (Figure 29).

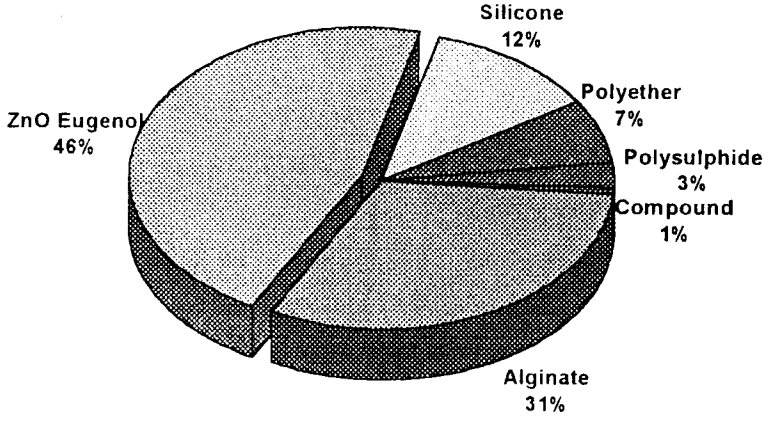
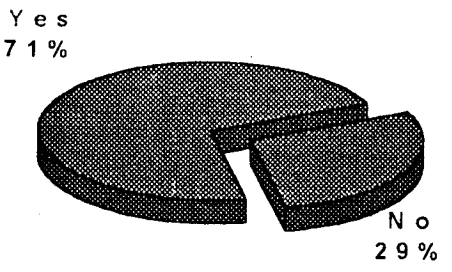


Figure 29 Common impression materials used in general practice: complete denture

Patient Management

Seventy-one % of the dentists reminded their patients of regular check-up appointments (Figure 39). About 53% of the dentists would do a treatment plan for every patient according to the idea behind 1°, 2° and 3° prevention (Figure 40, 41).



How?

- *Recall card / letter*
- *Telephone call*

Figure 39 Do dentists remind their patients for regular check-up appointment?

Stabilization → 1^0 Prevention → 2^0 Prevention → 3^0 Prevention

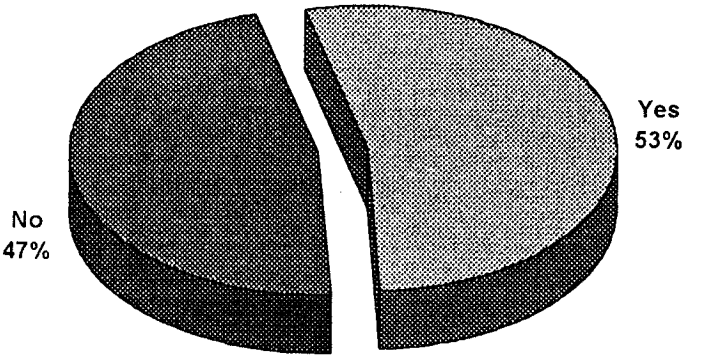


Figure 40 How many dentists formulate a treatment plan for every patient as follows:

- patients only want c/o to be dealt with
- time consuming
- finacial problems (patients)

Figure 41 Other treatment plans

The most common reasons reported by the dentists for patients to refuse treatment were the great expenses (96%), and pain during treatment (51%) (Figure 44). Other reasons comprised misconceptions, dental neglect and anxiety.

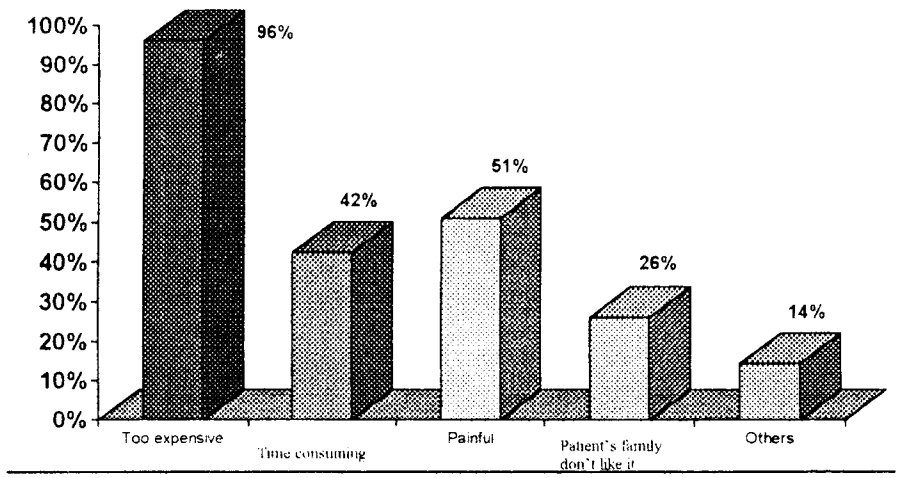


Figure 44 What is the most common reasons for patients to refuse treatment?

GDP's answers on the presentation of special cases

Case One **(see appendix B)**

Only 25% of the dentists would provide stainless steel crowns after root canal treatment on primary molars. The remaining dentists would simply fill the teeth with simple restoration like glassionomer or composite resin (Figure 45)

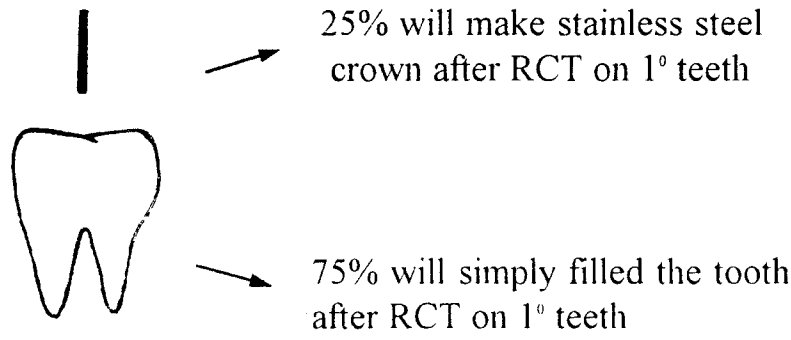


Figure 45 Case One: Treatment on 1° molar following RCT

Case Two **(see appendix B)**

For the case with the tetracycline stained dentition (case 2), about 46% of dentists would perform vital bleaching, 14% would do ceramics-metalic crown, 9% would do bleaching combined with porcelain veneer, another 9% would do composite veneer, 5% would do porcelain veneer, and about 18% would do nothing apart from reassurance (Figure 46).

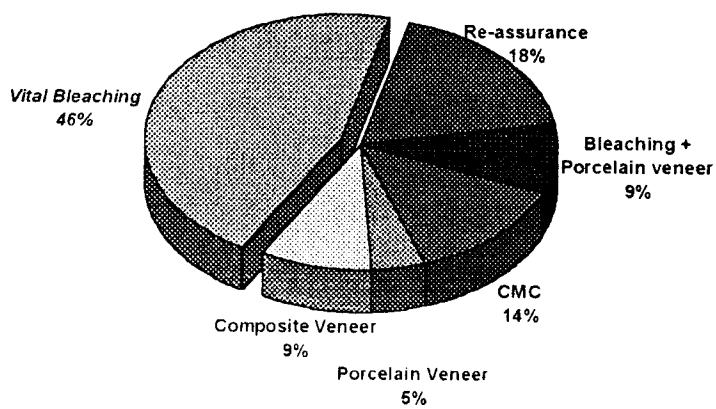


Figure 46 Case Two: Treatment for (tetracycline) stained teeth

Case Three **(see appendix B)**

For the case with unsuccessful endodontic treatment of 23 (case 3), about 68% of dentists would redo RCT, 14% of them would do apicectomy, 5% would have combined Redo. RCT and apicectomy, 5% would go to extraction and 9% would refer to a specialist in endodontics (Figure 47).

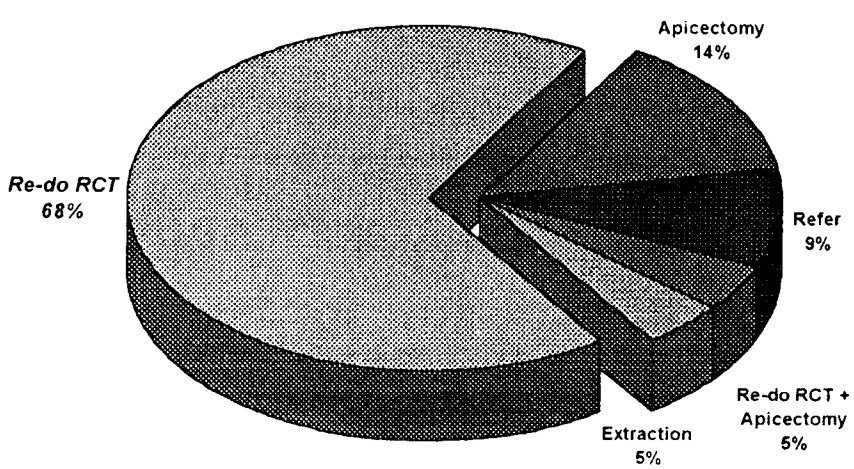


Figure 47 Case 3: Treatment for 23

Case Four **(see appendix B)**

This case showed a 65 year-old patient with stable occlusion clinically, according to this hospital, no upper and lower prosthesis have been provided for him. However, only 60% and 20% of the dentists realized that it was not necessary to provide the upper and lower prosthesis for the patients respectively (Figure 48)

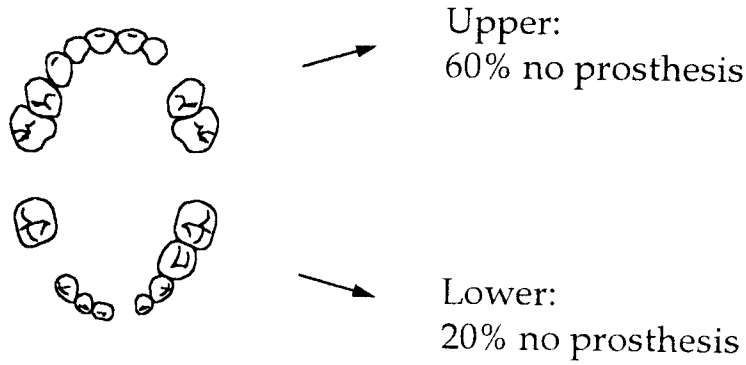


Figure 48 Case Four: Treatment on partial patient edentulous

Case Five **(see appendix B)**

65% of the dentists were able to diagnose that the severely periodontally compromised teeth are untreatable. And 35% of them will extract all mobile with no attempt to save those teeth (Figure 49)

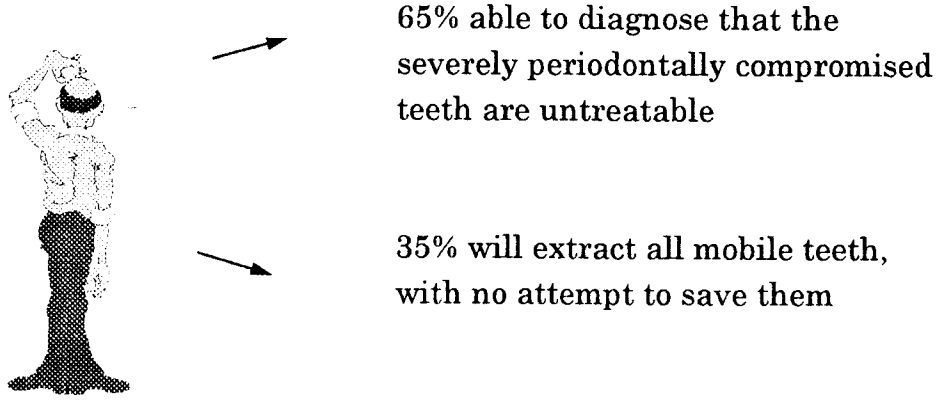


Figure 49 Case Five: Treatment on severely periodontally compromised teeth

DISCUSSION

One hundred seventy dentists out of a total population of 580 (30%) got the questionnaire. Of these 105 (61%) responded. This seems acceptable. However, as only 22 dentists were selected randomly to perform the ORAL DIAGNOSIS AND TREATMENT PLANNING cases, the results may not be representative neither concerning the number of dentists that participated nor the subjects dealt with in the questionnaire. But we look at it as a first exploration that might tell you where to follow up and can give an idea of the extent to which recommendations given at PPDH are followed in GDP.

Infection control

Concerning infection control, the staff and students in PPDH follow procedures for infection control that are modified from the recommendations of the American Dental Association (JADA, 1988). These are given by the Infection Control Subcommittee of PPDH in order to minimize the risk of cross infection of communicable diseases in dental clinics, diagnostic units and technical laboratories.

An imperative part of infection control and of course for correct treatment in general is a thorough medical history for each patient which should be taken at each visit. However, only 27% of the respondents only sometimes or even seldom did this. Surprisingly, 1% never took the medial history, and 56% did not follow up the first medical history to find out if changes had occurred. Hence, these dentists put their patients and themselves at risk of infections such as Hepatitis B which is endemic in Hong Kong, not to mention the risk of spreading AIDS that shows a tremendous increase in Southeast Asia. These figures may seem surprising, as the time necessary for this procedure is little. Unfortunately we do not know why this is neglected.

Although dental students only in special cases update the medical history at each clinical session especially if the patient is seen regularly, thorough medical history is always taken for patient evaluation at the first visit. All patients with known serious infections (e.g. TB, syphilis, hepatitis B, HIV infection, AIDS) as well as haemophiliacs will be treated in clinics specially equipped for such cases.

It is noticed that 100% always wear masks when examining and treating patients to protect the operator from getting aerosols, spatter and particles from patients' mouth. A majority of dentists (91%) always wear protective eyeglasses

to avoid getting saliva, blood drilling debris, pumice, or particles of calculus, amalgam etc. into the eyes. Besides, the routinely wearing of gloves is an important precaution to achieve reasonable standards of hygiene. In PPDH, it is a must to wear protective eyeglasses and gloves when treating patients. Furthermore, the gloves must be changed in between patients. Also, handwashing is compulsory procedures before and after treating patients. Returning to these recommendations given by PPDH, it is satisfying to see that so many dentists (91%) wear gloves. However, it is disappointing to notice that only 65% always replace gloves in between patients. It is not uncommon that gloves may be perforated during treatment and thereby permeable to bacteria. The reason for this disinclination to change gloves is not known but costs could be an explanation. With regard to handwashing, it is surprising to find that more than 25% did not wash their hands regularly, others either not before or after treating patients. Compared to the proportion wearing protective glasses, you could get the undue thought that dentists are more interested in their own protection than that of the patients.

The most commonly used sterilization method is autoclaving followed by chemical sterilization. A large proportion of dentists reported that they frequently used glutaraldehyde as chemical disinfectants. This may be due to its effectiveness against bacterial spores, acid- and alcohol-fast bacilli and a wide range of viruses. Although alcohol has not been accepted as an adequate disinfectant for use in dental clinics by the Council on Dental Therapeutics of the American Dental Association (ADA) since 1978 because its effectiveness is limited owing to rapid evaporation, it was noticed that 28% still used alcohol for disinfection of instruments.

It is recommended in PPDH that all instruments are sterilized by autoclave except those which cannot be heat sterilized. These are soaked in or wiped with 2% glutaraldehyde (high level disinfection). Alcohol (70%) has been replaced by 2% glutaraldehyde solution (e.g. Lobiosept) as disinfectant to clean dental chair, unit, operators tool and all work surfaces.

PPDH teaches that the only safe approach in preventing cross-infection is to assume that any dental patient may be a carrier of an infectious agent and therefore always adopt good infection control. Therefore it is a little disturbing that 26% of dentists would not employ the same infection control procedures for all patients. Unfortunately, we do not know what criteria they use for placing patients in the two different groups.

Needle-pick injuries can transmit many serious infectious diseases in the dental clinic and should be avoided. Unfortunately, 38% had got 1-3 and even 1% got 4-6 sharp/needle stick last year. We do not know at what time during the local anesthesia. The most crucial moments are during insertion and withdrawal during injection and the transfer of the uncapped needle between dentist and DSA. May be PPDH should impress this on the students and the graduates.

Among the reported obstacles to achieve 'ideal infection control", expenditures and difficulty in fitting in the daily routines were commonly cited. Lack of manpower was reported to be another limitation. May be the PPDH does not face these obstacles and take them into account when recommending hygiene procedures and instead only have their minds turned towards what is ideal and of the highest standard but unfortunately more or less unattainable.

Cooperation with auxiliary staff

Apart from assisting in routine dental procedures, most DSA also acted as receptionists. Some of them were involved in pouring impressions, taking medical history and radiograph. Because most DSAs were Form 5 graduates or even with lower education level, 90% of dentist claimed that it was necessary for them to train the DSAs. It may be questionable if DSAs are fully educated in functioning as a receptionist and if they are able to take over the responsibility for the medical history taking.

The dentists seem to do a lot of the technical work themselves. The reason for this could be to save expenditures, but an interest in the best treatment of the patient should of course be mentioned, too. Written laboratory-instruction and telephone conversations are the most common used ways of communication between dentists and dental laboratories. Sometimes photographs are used as a supplement. It is interesting to see that so many dentists really want to establish a good communication with their dental laboratory. It is probably to avoid expensive misunderstandings and secure the best result for the patient.

In comparison the students at PPDH are expected to select the shade for prosthesis themselves. However, they don't need to pour the working impressions, repair dentures and construct custom tray because these are considered the job of dental technicians. It is observed that students sometimes over use the laboratory without much participation in the laboratory works. The communication between students and dental laboratory is mainly through

written laboratory instruction. So, in this matter the GDPs go beyond what is recommended at PPDH.

Techniques, materials and procedures

There are so many techniques, materials and procedures in dentistry, and the development of new techniques and materials are so fast, that it is not uncommon - and understandable - to see that dentists may not follow or use what they have been taught and provided in the dental school when they are in their own practice. In fact they should not do so, especially not if they have graduated several years ago.

As mentioned previously we have not been able to include all techniques, materials and procedures in the questionnaire. But even though, there are some points of interest and worth discussing. First of all, the benefits from using rubber dam isolation is well documented in the literature as being essential for the quality of resin bonded restoration, resin bonded cementation, root canal treatment and bleaching of teeth. Surprisingly, there are only a few dentists that always use rubber dam isolation when performing RCT and resin bonding fillings. Time consumption and costs are considered to be the main reasons for not using it but once got used to it, putting on a rubber dam only takes a couple of minutes and results in a durable restoration because of good moisture control.

The most obvious difference between GDP and PPDH in the use of impression materials is the material used for crown and bridge impression taking. There is only 3% of the dentists who still use polysulphide for impression taking. Because of the long setting time and poor patient compliance, it is ridiculous to see that students in PPDH still are taught to use polysulphide impression material for crown and bridge work so in this field the GDPs seem to be ahead of PPDH.

But it should be mentioned that additional silicone has replaced polysulphide recently in the department of Conservative Department (1996). However, some departments are still using polysulphide!

It is interesting to see that for complete and partial denture making, only 52% will take preliminary impression for partial dentures. They probably go straight on and take the working impression immediately and proceed directly to the laboratory stages. About 30% of the dentists will omit the baseplate try-in stage in making complete dentures. It may save a visit for the patient and save a lot

of laboratory fee. The reason for not having balance try-in is probably the same. That this is true is confirmed by the fact that the steps skipped are not unimportant for a good result. But fewer visits for the patients and thus lower costs.

The use of topical anesthesia before injection is nearly always neglected by students at PPDH, may be because they are more concentrated on what is going to be done after the injection than how the patients feel. Although 'painful' treatment is the second most given reason for patients to refuse dental treatment as stated by the GDPs there are still 25% of them who seldom use topical anesthesia and 1% of them who will never use it! Again, if students are not trained to use it routinely, they will probably not use it when they get into practice. It is highly recommended that the importance of this very simple and inexpensive procedure is stressed by PPDH.

Radiographic examination is essential for dental check-up, accurate diagnosis of caries, periodontal disease and other pathology. However, there are few GDPs who always use X-ray examination in connection with check-up. At PPDH the students often need to take radiographs to help making diagnosis. This differences may be due to the inexperienced student in diagnosing oral diseases compared to GDPs. But another plausible reason could once again be the costs (X-rays are charged separately) which may have changed the advice: 'Better with one X-ray too much than one too few" to: 'Better with one X-ray too few than one too much".

Patient Management

Patient management is a broad term, generally speaking, any contact and interaction with the patient could be placed under the umbrella of this concept.

Strictly speaking, there is no special course which could be called patient management in the 5-year dental curriculum, although there is a little touch on patient's behaviour and patient's motivation during the first and second year. The interest of PPDH in this essential part of dentistry seems to be small.

In the questionnaire, we have - among other things - chosen a situation that frequently happens during practice: 'Refusal of treatment by patient'. It is interesting to see that many dentist will go on recommending the same treatment plan and try to convince the patient (76%) instead of showing some flexibility. Perhaps the dentists have offered the most appropriate and the best

treatment to the patients. However, providing alternative treatment options to patients is also our responsibility and it may improve the relationship between the dentist and the patient because we show that we understand the patient's concerns and needs.

On the other hand, in the PPDH, dental students also to a great extent try to convince the patient to accept the treatment plan, however the reason may not be the same. In fact, students' thinking are too departmentalized, most of the students cannot amalgamate their knowledge so that they can think in entity (holistic view) and finally provide the best treatment for the individual patient where all aspects are taken into account, personal as well as professional. So GDPs seem just to continue a behaviour they have learned at PPDH. For example, if a student gets a patient from the Department of Periodontology and Public Health, he will just try to save all the periodontally compromised teeth without considering extraction of some of them which may simplify the treatment and provide a better result for the patient. Similarly, students may try to make several bridges for a patient given by the Department of Conservative Dentistry rather than just to construct a removable partial denture for the patient.

Concerning the reason for patients to refuse treatment, too expensive treatment was the reason (96%) followed by painful treatment (51%) and time consuming (42%). It is well known that the public consider dental treatment as expensive. The explanation: "time consuming" may be looked at under the same reason. Maybe patients have "secondary" expenditures when visiting a dentist (sick leave, child-minding etc.) However, surveys have showed that the increase rate of dental treatment fees is reasonable but still high if you are not insured. An unfortunate linking between pain and dental treatment stops nearly half of the patients from seeking help from dentist when they have dental problems. Unfortunately, students at PPDH are not taught how to handle these two major reasons for avoiding dentists.

Oral diagnosis and treatment planning is introduced in the second year, the basic principle is stabilization, primary prevention, secondary prevention and tertiary prevention. About 47% of the interviewees do not follow the above guidelines to set up a treatment plan for their patient.

It is noticed that they only formulate a treatment plan which is directly related to the patient's chief complaint. Some of the dentists even states that it is not realistic or a waste of time to do anything else! Actually, formulating a good

and sensible treatment plan and clearly, thoroughly explain this to patients is crucial to good dentistry. Besides, dentists today should be prevention oriented, and not just looking at the problems at hand.

About 70% of the dentist will remind their patient for check-up appointment either in form of a reminder card or a phone call. Other 30% do not do this. This may be due to their patients are highly motivated and will show up again without remainder or that the dentists ignore this aspect of service. If so the PPDH may be to blame. The dental students are quite inadequate in this aspect, most of them do not have a schedule for every patient to secure that patients can be seen regularly and treatments can be provided at the most appropriate time. Formal teaching on this aspect is lacking.

ODTP

Five clinical cases concerning paedontic, cosmetic, endodontic and crown and bridge, prosthodontic and periodontal treatment were presented to 22 dentists to find out to what extent diagnosis and their treatment plans would differ from those recommended by PPDH.

The general impression of the results is interesting, because of the differences between GDPs' suggestions and that of the dental students are quite large.

Case One

Stainless steel crown which is highly recommended by the Department of Children's Dentistry & Orthodontics for endodontically treated primary teeth and is performed by all dental students is not that popular in private practice. The reasons may be cost, time and co-operation of patients, and maybe the excellent properties of modern restorative materials.

Generally speaking, the treatment provided by GDP for children patients depends very much on the behaviour of the children, the dental awareness of the parents and also the economic status of the family. In PPDH, the cost for the treatments is low and the patients seen by students are all screened, so that they are considered as co-operative and manageable by students. Therefore students can provide any ideal treatment on their patient. It is interesting to know that many dentists would refer their child patients to PPDH for complex treatment. These patients may finally be treated by students! So maybe the reason for

referring the patient is not the complexity of the case but to get rid of a lot of troubles.

Case Two

Tetracycline staining is still very common in the Hong Kong population. Therefore such a case was included in the row of cases. Porcelain veneer, composite veneer, vital bleaching or crowning are the treatment options. Although there are many patients admitted to PPDH who according to PPDH need porcelain veneer. This is not that common in GDP. They found that porcelain veneer is easily miss due to chipping or fracture and the shade is not perfect compared to full veneer crown. In short, they are quite cautious in making porcelain veneer for patient. They do not want to fail because it is very expensive treatment.

Case Three

It showed that the knowledge on endodontic is reasonable for the GDP. However when they come to the situation where replacing the missing tooth is complicated by occlusal problems, they may either ignore these problems or pay little attention to them. It indicates that the undergraduate course in occlusion may be inadequate.

Case Four

Again this is a case involving occlusal problem. A 65 year old patient with a few missing posterior teeth, where the occlusion is stable. There are only very few of GDP who stated that due to the age and stable occlusion, they will not embark themselves in construction of prosthesis. Unfortunately, some GDPs seem to replace the missing teeth simply because they are missing!

Case Five

This is a periodontal case. We found that about one-third of the GDP would extract all mobile teeth without attempt to save those that were worth saving. It is disappointing to see that the difference between the choice of PPDH and the GDPs is so great and what those dentists would do is irreparable.

CONCLUSIONS

The changes in Dentistry are tremendous. What has been taught in school may not be applicable after a few years, especially in general practice.

Students should have the opportunity to try to work under GDP conditions during their study to make the change to GDP smoother.

RECOMMENDATIONS

In conclusion we - based on our project - would like to put forward the following recommendations:

1. All dentists should regularly be reminded of the importance of taking a medical history of new patients and of updating the history regularly by themselves.

2. Guidelines and criteria for infection control should be stressed by the Hong Kong Dental Association and maybe even checked.

3. Encourage GDPs to participate in continuing education to update their professional knowledge.

4. The use of rubber dam in GDP should be recommended.

5. The students should learn how to train and work together with the auxiliary staff.

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All dentists who participated

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Appendix A

Dear Colleague to be

4 December 1995

We are a group of final year dental students at the Faculty of Dentistry who have chosen as our Community Health Project (a part of our community health course):

"A comparison of selected routines and dental materials used in general practice with what is taught at the Faculty of Dentistry"

The aim is to get an impression of to what extent the principles taught at the Dental Faculty are used in general practice and to what extent they are applicable to general practice. This might help to point out discrepancies if any and thus could be the first step towards a more practical oriented teaching.

We have randomly selected 150 dentists graduated since 1985 to be interviewed. You are among these. We kindly ask you to answer the enclosed questionnaire and return it to us using the prepaid and addressed return envelope.

As the questionnaire is to be returned anonymously and your answers will be pooled with those of your colleagues you will keep your integrity.

It is very important for the success of our project that we get as many responses as possible. So your help will be very much appreciated.

Please return the questionnaire no later than

15th December 1995

Should you have any queries regarding this project and the questionnaire, please feel free to contact our advisor, Dr. H. Birn.

Thank you in advance for your help.

Mr. P.L. Poon, Johnny
Coordinator
Group 5.5
PAGER: 71313323 A/C 9601

Dr. H. Birn
Project Advisor
Lecturer

Please tick the appropriate answer
Please answer anonymously

A. Infection Control

1. How often do you take a medical history which includes questions related to infectious diseases?

1.1 ☐ Always, at each visit
1.2 ☐ Always, but at first visit only
1.3 ☐ Sometimes
1.4 ☐ Seldom
1.5 ☐ Never

2. How often do you do the following procedures?

		Always	Sometimes	Seldom	Never
2.1(1-4)	a. wear protective eyeglasses	☐	☐	☐	☐
2.2(1-4)	b. wear mask	☐	☐	☐	☐
2.3(1-4)	c. wash your hands before & after treating patients	☐	☐	☐	☐
2.4(1-4)	d. wash your hands before treating patients	☐	☐	☐	☐
2.5(1-4)	e. wash your hands after treating patients	☐	☐	☐	☐
2.6(1-4)	f. wear gloves	☐	☐	☐	☐
2.7(1-4)	g. replace gloves in between patients	☐	☐	☐	☐

3. What sterilization procedures do you use?
(you may choose more than one)

3.1 ☐ Autoclave
3.2 ☐ Dry heat
3.3 ☐ Boiling water
3.4 ☐ Chemical "sterilization"

4. Please name the chemical disinfectants you use routinely in your surgery:

_____

_____

_____

5. From where do you have the information/guidelines you follow for infection control?
(you may choose more than one)

5.1 ☐ Undergraduate training
5.2 ☐ Journals
5.3 ☐ Professional meetings
5.4 ☐ Commercial advertising
5.5 ☐ Other dentists in practice

6. What do you perceive as the main obstacles to achieve "ideal infection control"?
(you may choose more than one)

6.1 ☐ Expenditures
6.2 ☐ Lack of manpower
6.3 ☐ Difficult to fit in daily routines
6.4 ☐ Others, please specify: _____

_____

7. Do you use the same infection control procedures for all patients?

7.1 ☐ Yes
7.2 ☐ No

8. How many sharps/needle stick injuries have you been exposed to during the last year?

8.1 ☐ nil
8.2 ☐ 1-3
8.3 ☐ 4-6
8.4 ☐ >6

B. Cooperation with Auxiliary Staff

9. Apart from assisting in routing dental procedures, would your DSA be involved in the followings:

9.1 ☐ Receptionist (making appointment, etc.)
9.2 ☐ Medical History taking
9.3 ☐ Pouring impressions
9.4 ☐ X-ray taking

9.5 ☐ Others, please specify: _____

_____

10. How often do you do the following procedures yourself?

		Always	Sometimes	Seldom	Never
10.1(1-4)	a.shade selection	☐	☐	☐	☐
10.2(1-4)	b.pouring impressions	☐	☐	☐	☐
10.3(1-4)	c.repair dentures	☐	☐	☐	☐
10.4(1-4)	d.custom tray construction	☐	☐	☐	☐
10.5(1-4)	e.bite rim	☐	☐	☐	☐

11. Do you refer some of your patients to a hygienist?

11.1 ☐ No
11.2 ☐ Yes
If "yes" what treatment would you refer for?
(you may choose more than one)

11.2.1 ☐ Scaling & OHI
11.2.2 ☐ Prophylaxis (removing stain etc.)
11.2.3 ☐ Root planning
11.2.4 ☐ Polish restorations
11.2.5 ☐ Preventive measures (Fissure Sealant and Topical Fluoride application)

12. Do you train your DSA yourself?

12.1 ☐ No
12.2 ☐ Yes, please list the difficulties if any: _____

_____

C. Technique, Material & Procedures

13. Do you use rubber dam isolation for the following procedures:

		Always	Sometimes	Seldom	Never
13.1(1-4)	a.Endodontic treatment	☐	☐	☐	☐
13.2(1-4)	b.Fissure Sealing	☐	☐	☐	☐
13.3(1-4)	c.Class V glass ionomer restoration	☐	☐	☐	☐

14. What type of impression material do you use for working impressions for:

Crown & Bridge: _____

Partial dentures: _____

Complete dentures: _____

15. Please tick the steps you go through when constructing complete and partial dentures

		0.01 Complete dentures	0.02 Partial dentures
15.1	Preliminary impression	☐	☐
15.2	Mouth preparation & working impression	☐	☐
15.3	Baseplate/framework try-in	☐	☐
15.4	Flat plane try-in/wax-up try-in	☐	☐
15.5	Blance try-in	☐	☐
15.6	Denture Delivery	☐	☐
15.7	Review	☐	☐

16. Do you use topical anesthesia before injection of local anesthetic:

16.1 ☐ Always
16.2 ☐ Sometimes
16.3 ☐ Seldom
16.4 ☐ Never

17. Do you take radiographs in connection with the following procedures:

		Always	Sometimes	Seldom	Never
17.1(1-4)	a.Dental check up	☐	☐	☐	☐
17.2(1-4)	b.Diagnosis of caries	☐	☐	☐	☐
17.3(1-4)	c.Diagnosis of periodontal disease	☐	☐	☐	☐
17.4(1-4)	d.Diagnosis of other pathologic disorders	☐	☐	☐	☐
17.5(1-4)	e.Diagnosis of trauma	☐	☐	☐	☐

18. What types of radiographs are available in your clinic?
(you may choose more than one)

18.1 ☐ Panelipse
18.2 ☐ Bitewings
18.3 ☐ Periapical (parallel/bisect)
18.4 ☐ Others, please specify: _____

D. Patient Management

19. Do you remind your patients of regular check-up appointments?

19.1 ☐ No
19.2 ☐ Yes, please tell how: _____

_____

20. Do you make a treatment plan for every new patient after a general oral examination using the following guidelines:

Stabilization → 1° Prevention → 2° Prevention → 3° Prevention

20.1 ☐ Yes
20.2 ☐ No, why not: _____

_____

21. What would you do if a patient will not accept your suggested treatment (please rank your reaction from 1 (most likely) to 5 (least likely)):

21.1 ☐ Try to convince the patient
21.2 ☐ Provide alternative treatment
21.3 ☐ Refer to another dentist
21.4 ☐ Discharge the patient
21.5 ☐ Others, please specify: _____

_____

22. Rank from 1 (most important) to 6 (least important) the importance of the following factors for a successful dental career:

22.1 ☐ Painless dental treatment
22.2 ☐ Good cooperation with your patients
22.3 ☐ An empathetic atmosphere in the clinic

22.4 ☐ High quality of work
22.5 ☐ Well-equipped (modern) clinic
22.6 ☐ Good time management

23. What are the most common reasons for your patients to refuse treatment? (you may choose more than one)

23.1 ☐ Too expensive
23.2 ☐ Time consuming
23.3 ☐ Painful
23.4 ☐ Their family do not want them to have the treatment
23.5 ☐ Others, please specify: _____

_____

Thank you very much!

Returning address:

Dr. H. Birn
Department of Periodontology & Public Health
Prince Philip Dental Hospital
34 Hospital Road
Hong Kong

Dear Colleague to be,

Around two weeks ago you received a letter and a questionnaire from us.

Unfortunately we have not got all the questionnaires back which is crucial for the success of our Community Health Project entitled:

"A comparison of selected routines and dental materials used in general practice with what is taught at the Faculty of Dentistry"

As the questionnaire is to be returned anonymously we do not know who have forgotten to answer. Therefore, we write this letter with the enclosed questionnaire to **all** dentist who were originally contacted.

If you have already answered the questionnaire then, please ignore this letter.

If not, please answer the questionnaire now and return it to the address written at the end of the questionnaire.

Thank you in advance.

Mr. P.L. Poon, Johnny
Coordinator
Group 5.5

Dr. H. Birn
Project Advisor
Lecturer

Appendix B

Case One

Patient is a 6 years old Chinese boy immigrated from China 4 months ago. His chief complaint is "pain in lower left teeth for 2 weeks". Initial oral findings show primary dentition with extensive and multiple carious lesions. Buccal abscess on 74 with radiolucency.

a. What is your treatment on 74 and 75?

b. If pulpotomy/pulpectomy has been done on 74 and 75, what is your final treatment on 74 and 75 respectively?

c. If 74 is extracted, will you provide a space maintainer? Why?

d. Any other treatment options?

Case Two

Patient is a 17 years old girl complained of "discoloration of anterior teeth". Past medical history revealed that she had medication of Tetracycline in childhood.

a. What is your most likely treatment? Why

b. Any other treatment options?

Case Three

Patient is a 28 years old Chinese male complained of pain at 23 and 24 in May, 1993, which was previously root treated and crowned in GDP. The quality of the root treatment was poor. Radiolucencies were found at apical region of 23 and 24. 24 was then extracted due to caries extending into the root canals. Patient has canine guided occlusion.

a. What is your most likely treatment for this patient? Why?

b. Any other treatment options?

Case Four

Patient is a 65 years old Chinese male asked for any necessary replacement for the missing teeth, presented with multiple missing and hypermobile teeth. Radiographs show that nearly total buccal and lingual bone loss on 48 and 10mm probing depth at multiple sites of that tooth, slight angular bone loss on mesial and distal aspects of 37.

Mobility

~~18~~ 17 16 15 14 13 12 11	21 22 23 ~~24~~ 25 26 27 28
48 47 ~~46~~ 45 44 43 42 41	31 32 33 34 35 ~~36~~ 37 ~~38~~

Mobility M2 M2 M2

a. What is the most likely treatment for this patient? Why?

b. Any other treatment options?

Case Five

Patient is a 53 years old Chinese male requested replacement of missing teeth. Clinical examination revealed that the anterior teeth are periodontally compromised. Patient's oral hygiene is poor.

Periapical radiographs of the anterior teeth are provided. (Please assume that the periodontal condition of the lower teeth has been controlled and is suitable for partial denture placement.)

a. What is the most likely treatment for this patient? Why?

b. Any other treatment options?